Nov. 1, 1927. 1,647,882

G. H. OSTERHOUT, JR

FOUNTAIN PEN

Filed Nov. 15, 1926

Fig. 1.

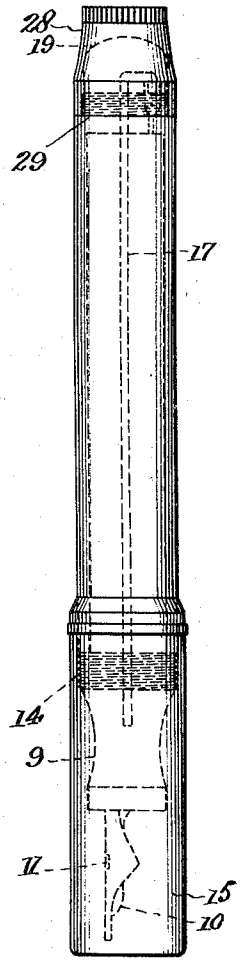


Fig. 2.

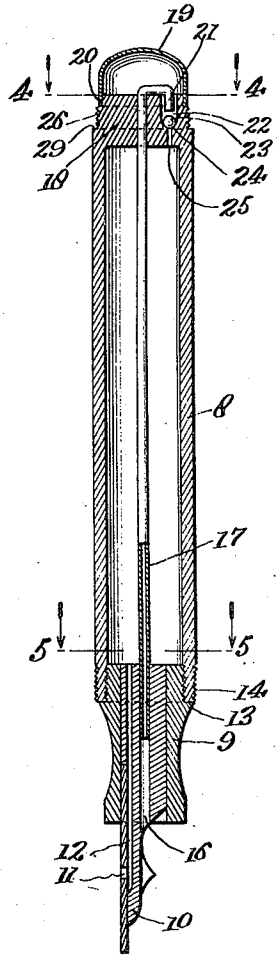


Fig. 3.

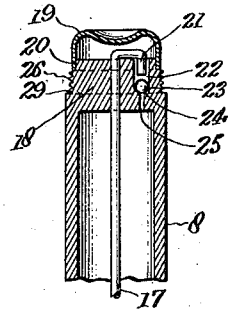


Fig. 4.

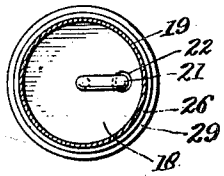


Fig. 5.

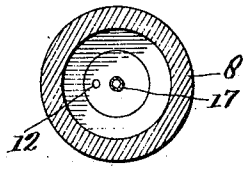


Fig. 6.

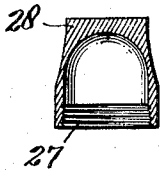
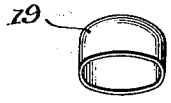


Fig. 7.



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UNITED STATES PATENT OFFICE.

GEORGE HOWARD OSTERHOUT, JR., OF BEAUFORT, SOUTH CAROLINA.

FOUNTAIN PEN.

Application filed November 15, 1926. Serial No. 148,471.

The present invention relates to improvements in fountain pens and has for an object to provide a simply constructed, inexpensive pen in which the rubber bag containing the ink within the barrel and its attendant disadvantages are dispensed with, the barrel itself being constructed to receive the ink.

Another object of the invention lies in providing an improved fountain pen in which the barrel may be rapidly and positively filled and emptied; in which the ink will be fed to the pen only by capillary attraction; and in which no leakage of ink will be permitted when the pen is carried about the person.

With the foregoing and other objects in view, the invention will be more fully described hereinafter, and will be more particularly pointed out in the claims appended hereto.

In the drawings, wherein like symbols refer to like or corresponding parts throughout the several views,

Figure 1 is a side view of a pen with the caps in place;

Figure 2 is a longitudinal section taken centrally through the pen with the end caps removed;

Figure 3 is a fragmentary longitudinal view showing the bulb slightly depressed;

Figure 4 is a cross-section taken on the line 4—4 in Figure 2;

Figure 5 is a similar view taken on the line 5—5 also in Figure 2;

Figure 6 is a longitudinal section through the bulb end cap; and

Figure 7 is a perspective view of the bulb.

Referring more particularly to the drawings, 8 designates the barrel of the pen which may be of transparent or opaque material, open at one end and internally threaded to receive the plug 9 containing the pen nib and point 10. This nib and point are provided with the ink opening 11 and passage 12, such passage extending through the plug 9 and in communication with the interior ink space of the barrel 8. The plug is shouldered at 13 to take against the end wall of the barrel 8 and threads 14 are provided upon the exterior wall of the barrel 8 to receive complementary threads upon the cap 15 usually employed for housing and protecting the pen point.

The plug or nib is further provided with the passage 16 opening downwardly to the atmosphere and upwardly into a tube 17 which extends up through the barrel 8 and through the upper closed end 18 of said barrel and into the interior space of the small rubber or other bulb 19, which is of the cap shape shown in Figure 7, having its rim portion or open end stretched across the shouldered upper portion 20 of the barrel end 18. The tube 17 is bent at right angles within the bulb space and has its terminal end 21 disposed downwardly in substantial parallelism with the tube 17. This downwardly disposed terminal end 21 opens within a valve chamber 22 having therein the pellet or ball valve 23 which is adapted to vibrate between the open end of the tube terminal 21 and a seat 24 formed at the bottom of the cavity or chamber 22 above a port 25 which places the chamber 22 in communication with the upper end of the ink space of the barrel 8.

The end wall 18 of the barrel is provided with an intermediate externally threaded portion 26 adapted to receive the internal threads 27 on the bulb and cap 28, which extends about and protects the bulb 19 when not in use. The cap 28 is screwed tightly against the shoulder 29 on the barrel end 18. The threaded intermediate portion 26 is of less diameter than the barrel 8, but of greater diameter than the shouldered portion 20, in order that the cap 28 may envelop without interference the bulb 19.

In operation the pen point and nib are inserted in the ink and the rubber bulb 19 is squeezed whereby to force the pellet valve 23 downwardly against the seat 24, while leaving the tube 17 open for the expulsion of air from the bulb space downwardly through the passage 16 and into the surrounding atmosphere. On release of the bulb 19, the pellet valve 23 will be drawn upwardly against the open end 21 of the tube, thus preventing the drawing in of atmospheric air through the tube, and the atmospheric pressure acting upon the upper surface of the ink body in which the pen is inserted forces the ink up through the passage 12 and into the interior barrel space 8. The tube being of small diameter is insufficient to supply the bulb with air due to the rapid expansion of the bulb, and this rapid expansion of the bulb creates a sudden initial suction of great force which cannot be entirely satisfied through the tube

and consequently air is sucked into the bulb from the barrel with the result that the valve 23 must be lifted and closed against the tube end, thus throwing a greater suction on the barrel to maintain the valve against the tube end. By repeated collapsing of the relatively small bulb 19, the desired number of charges of ink may be drawn into the barrel to partially or completely fill same.

When holding the pen point out of the ink body, the same operation of the bulb will act to empty the barrel 8.

It will be apparent that I have dispensed with the rubber sack inside of the barrel which deteriorates and is a source of nuisance and expense in present types of fountain pens. The pen is completely closed at the top and is therefore not subject to leakage; the operation of filling and emptying is simple and can be carried out readily and quickly; and the barrel may be flushed out in the same way with water. There is only one part subject to wear, namely, the rubber bulb 19 and this may readily be replaced at small cost. In the writing position, with the pen point down, the pellet valve 23 automatically closes the port 25 causing ink to leave the barrel only by the capillary attraction. In the reversed position in the pocket, the pellet valve 23 will lie upon and close the terminal end 21, thus preventing the ink from entering the tube 17. The air in bulb 19 then acts as a lock preventing ink from barrel 8 entering the port 25. The construction is inexpensive and easy to make.

It will be obvious that many changes in the construction, combination and arrangement of parts could be made, which could be used without departing from the spirit of my invention, and I do not mean to limit the invention to such details, except as particularly pointed out in the claims.

Having thus described my invention, what I claim and desire to secure by Letters Patent of the United States is:—

1. An improved fountain pen comprising a barrel open at one end and closed at its opposite end, a pen point unit carried by the open end and having a pen point in communication with the interior space of the barrel and a passage connecting with the atmosphere, a tube connecting with said passage and extending through the closed end of the barrel, a bulb extending about the exposed end of the tube and adapted to expel air from the interior space of the bulb to the atmosphere through said tube and passage, said closed end of the barrel having a port therein communicating with the bulb space, and a valve adapted to move back and forth between said port and the tube end, due to the collapsing and expanding movements of the bulb.

2. An improved fountain pen comprising a barrel having a closed ported end and an open end, a pen point unit inserted in the open end having a passage for placing the pen point in communication with the interior of the barrel space and a second passage leading to the atmosphere, a tube connecting with the passage extending through the barrel and through and beyond the closed ported end, the exposed end of said tube being bent about with its terminal open and disposed opposite the port in said barrel end, a ball valve adapted to move back and forth between said port and tube end, and a small bulb extending about the closed end of the barrel.

3. An improved fountain pen comprising a barrel having an interior space for ink, a pen point unit inserted in one end of the barrel and having a pen in communication with the interior space of said barrel, the other end of the barrel having a port and a valve chamber communicating with the port, a tube communicating with the atmosphere and having an end disposed in opposed spaced relation to said port, a valve in the chamber adapted to move between said port and the tube end, a shouldered part on said other end of the barrel, and a bulb stretched over said shouldered part.

GEORGE HOWARD OSTERHOUT, Jr.